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SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE •

MARCH 27, 1937

The Lily's Transparency

See Page 201

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The Weekly Summary of

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DO YOU KNOW?

Four out of five motor vehicle accidents occur on dry roads, in clear weather.

The Supreme Court building at Washington is believed to contain more marble than any other building in the world.

Canada's new radium-producing center in the sub-Arctic is over 3,000 miles from the refinery at Port Hope, Ontario.

To make geography vital, 100 British schools have "adopted" a ship, and are kept in touch with voyages, cargo loadings, and the countries visited.

Despite the coldest winter in Yosemite Park history since 1906, several bears have defied bear tradition by remaining out of hibernation all season.

Bone flutes 30,000 years old have been found in Europe, but whether Stone Age man used them just for signaling, or playing tunes, is not known.

Whole phrases of the Old Testament, letter for letter, have been found in ancient writings at Ras-Shamra, Syria, shedding new light on sources from which Hebrew literature was evolved.

The geology of the bottom of the Red Sea has been studied by an Egyptian expedition.

A new color film made in Germany is in three layers—one sensitive to blue, the second to green, and the third to red.

Some of the world's greatest floods cause little disturbance, because they occur on river valleys not thickly inhabited.

Leaves of a plant grow directly to their mature size and stop, but stems usually increase in length as long as the plant lives.

The historic Church of St. Sophia in Istanbul is now a public museum, and the sarcophagi in which the Byzantine emperors rest are to be placed there.

To study voice changes that occur in diseases, such as paralysis, a specialist in voice defects makes records of sound waves of the voices for visible examination.

The national park services of the United States and Japan have exchanged a stone from the top of Mount Rainier and one from Mount Fuji-yama as a gesture of good will.

WITH THE SCIENCES THIS WEEK

Most articles are based on communications to Science Service or papers before meetings, but where published sources are used they are referred to in the article.

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ANTHROPOLOGY

Modern Man Gets New Kin; Palestine Man "One of Us"

Anthropologists and Archaeologists From All Over World Gather for Symposium on Early Man

THE WORLD'S two billion living inhabitants have been handed a new relative.

Speaking at the opening session of the International Symposium on Early Man, held at the Academy of Natural Sciences, Philadelphia, Theodore McCown of the American School of Prehistoric Research introduced Palestine Man—who must have lived at least 60,000 years ago—as no mere ancestor of modern man, but one of the family, so to speak. Sir Arthur Keith, eminent British anthropologist, was joint author of the report brought to America by Mr. McCown.

Thus, Palestine Man may give people who now live on earth a new pride in their antiquity. For *Homo sapiens* is discovered existing in the middle of the Old Stone Age.

Two types of man lived in the Palestine caves, and both lived about the same time, Mr. McCown explained. The caves which have yielded their skeletons are at Mount Carmel. British and American archaeologists have been working jointly to salvage the important chapter of prehistory buried there.

Of the two types of Palestine Man extracted from their hardened earth beds, one type was small and had many traits like the clumsy, chinless, low-browed Neandertal men of western Europe. The other type was tall, even approaching six feet, and these men had faces much nearer our own modern type.

Evolutionary Plasticity

The fact about these latter people that astounds scientists is that they varied widely among themselves in type, in what is described as "their evolutionary plasticity."

They are a varied type of man, the report declares, "who may be considered as the prototype of the earliest modern Europeans."

Carrying the history of mankind back into a much earlier chapter, long before *Homo sapiens,* W. C. Pei, of the Institute of Human Paleontology in Paris, sent word to the Symposium of discovery in China of extremely ancient stone tools. One piece of worked stone and some worked bones are believed to be "the oldest indication of human handwork in China."

These tools, he said, seem to be even older than Peking Man, who is credited with beginning the true Stone Age industry in China. Peking Man, China's oldest known inhabitant, has been given an estimated age of half a million years. The new discovery of stone tools goes back to the Pliocene period of geologic time, when man and his work are still almost completely mysterious.

Earth Revolution

A violent revolution of the earth, upheaving and lifting the whole of eastern Asia, gave China its first human immigrants.

This picture from man's earliest days on earth was brought to the International Symposium on Early Man, by Père Teilhard de Chardin, consulting paleontologist of the National Geological Survey of China.

Peking Man, China's oldest inhabitant, whose skeletal remains and campfires and tools have been found buried in caves near Peking, can be used as an index to happenings in his time in Asia, Malaya, India, and Europe, Pére Teilhard said.

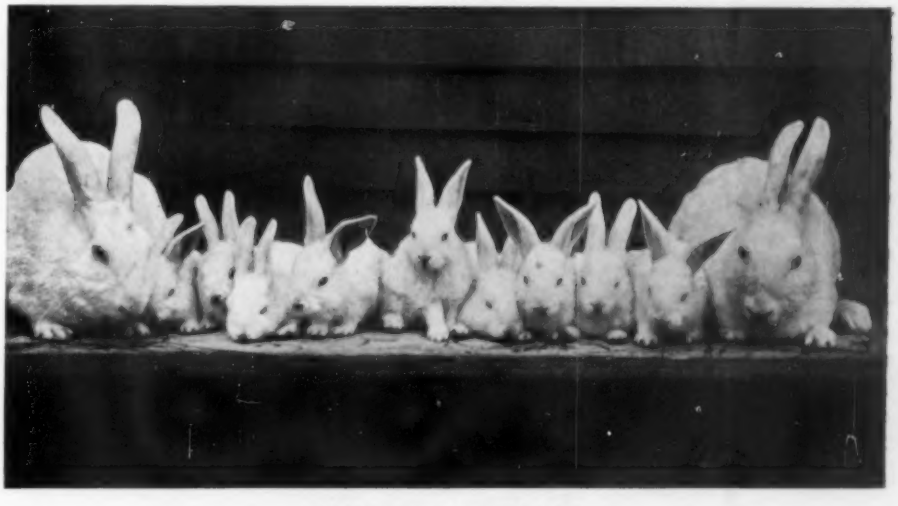
Giving Peking Man the same geological antiquity as Java Man, who is generally rated half a million years old and the oldest and most ape-like type in man's ancestry, Père Teilhard stated that Peking Man represents an early man of primitive type; closely approaching Java Man. Peking Man, he added, is definitely a step below the Neandertal type of prehistoric man.

"Sinanthropus (Peking Man) is perhaps the next to last step traceable between anthropoids and man," he declared.

Peking Man arrived in China, the geologist explained, just after eastern Asia was uplifted in a rejuvenating movement of the earth's crust. Lakes in North China dried up definitely in this geologic revolution. Their sediments were tilted. Rivers cut deep gorges, and thick fans of red clay spread along the slopes. Subtropical animal life vanished from China, replaced by other animals such as deer migrating from the northwest. Water buffalo came up from the south, and from the south, probably, came Peking Man.

The water buffalo and euryceroid deer that were contemporaries of Peking Man are seen as significant evidence which will eventually fit China's earliest human chapter to that of central Europe.

A lack of sea-going craft kept early man from making long voyages, and delayed human occupation of some dis-



EASTER GREETINGS

A whole family of Easter bunnies. They hatched from eggs, too, as you may see by referring to page 197.

tant lands of the earth. This suggestion was advanced by Prof. D. S. Davidson of the University of Pennsylvania, in reconstructing the arrival of man in Pacific islands.

"Distant voyages on the open sea," he said, "are not known for any part of the world much before 1000 B.C., although coastwise traffic appears to have been carried on for 2,000 years before."

From the time of Java Man, half a million years ago, down to about 2,000 years ago, there is a long gap for which science has little definite evidence about human happenings in the Pacific. Indirect clues suggest that Tasmanians came from Asia to Tasmania in the Old Stone Age, Prof. Davidson said, and Australians reached their continent toward the end of the Old Stone Age, possibly 15,000 or 20,000 years ago.

The order of emigrants from Asia to Pacific homes is believed to be Tasmanians, Australians, Papuans, Melanesians, Indonesians, and Malays.

The theory that Pre-Polynesian sailors voyaged across the Pacific to America, and introduced their customs and language traits into Indian cultures, was discounted by Prof. Davidson. He said there probably were Polynesian voyages, but not earlier than 1400 years ago for want of suitable boats. And the few Polynesians who apparently did come made no important impression on South American Indian cultures.

Ice Age Americans

Columbus may have discovered America for the white man, 1492. But who discovered America for the red man—and when?

The verdict of Prof. Ernst Antevs, well-known Swedish geologist now working in America on this highly controversial problem in American prehistory, was given to the same meeting.

America, Prof. Antevs said, appears to have been discovered before the Ice Age ended; that is, over 10,000 years ago.

Changes in climate deeply affected ancient man, the geologist said. When the last glaciers melted back toward polar regions in Asia, it appears that roving hunters followed the mammoth and other mammals spreading north. The quest for food led some of these Asiatics across Bering Strait and so they entered the New World.

"Doubtless the oldest records of man in North America are still hidden in Alaska, his port of entry," the geologist stated.

Meanwhile, he continued, the oldest traces of man in America that scientists are able to assign to an estimated time in prehistory, are several thousand miles from Bering Strait in the Southwest.

Giving his opinion of some significant sites, Prof. Antevs said:

"Possibly the oldest records of man found in North America are those near Abilene, in Texas, although a critical study is needed concerning the actual age and conditions of formation of the artifact-bearing beds. Probably the oldest find of the Folsom culture is that at Clovis in eastern New Mexico, which appears to be 12,000 or 13,000 years. The Pinto culture of the Mohave Desert, 170 miles due east of Los Angeles, may be about equally ancient."

While man's presence in America for 10,000 years or more is indicated by this study of earth layers containing his weapons, campfires, and ancient animals slain in the hunt, the identity of the early hunters themselves is as baffling as ever. Certain skeletons or fragments have been found, which some anthropologists link with this hunting age. However—

No skeletons yet unearthed in America reveal men earlier than, or different from, Indian types, the symposium was told by Dr. Ales Hrdlicka, noted anthropologist of the U. S. National Museum. This point of view would suggest one of two things: Either remains of the early hunters are still completely and totally undiscovered, or Indian types were developed thousands of years ago in America and remained with little change—an idea difficult for anthropologists to credit.

Dr. Hrdlicka, who has charge of the Museum's large collections on physical anthropology, reported that American Indians vary remarkably in head type, yet all the while "presenting a basic racial unity." Indians had high or low foreheads, heads long or broad. Some even had skulls practically replicas of Old Stone Age skulls from Europe. This variety, Dr. Hrdlicka declared, has been too little recognized.

The famous skeleton of Minnesota Man cannot be 20,000 years old, as has been claimed for it, Dr. Hrdlicka said, because it is the skeleton of a Sioux Indian. The Sioux inhabited the region in Indian times.

"Item for item, the major characteristics of the Minnesota skull are duplicated in the Sioux," he reported.

It could not be assumed, without overwhelming proofs to the contrary, Dr. Hrdlicka concluded, that a type of American man would continue to occupy the same limited part of the continent, undergoing no physical changes in thousands of years. (*Turn to page* 198)

BIOLOGY

"Real Life" Drama Produced By Agriculture Department

LIFE'S beginnings, most elemental of all drama, is Uncle Sam's latest motion picture production. A "real life drama," in the literal sense of the words, has just been given its initial release by the U. S. Department of Agriculture's motion picture division.

A rabbit egg is the leading character. Rabbits really do have eggs, and this one, no bigger than a mustard seed, is typical of those from which all animal life from fish to man begins.

The story is the life history of the egg from the moment it bursts from the follicle of the ovary. This process, called ovulation, was never filmed before. A special technic originated by the film's scientific director, Dr. E. I. Evans, dairy scientist, made it possible for photographer Carl Turvey to include this early act in life.

"For the first time on any screen," there is shown creation's most vital race scene, the rush of the male spermatozoa to the female egg. The winning sperm cell forges through the egg's outer membrane, and the sperm cell nucleus merges with the egg nucleus into one large cell.

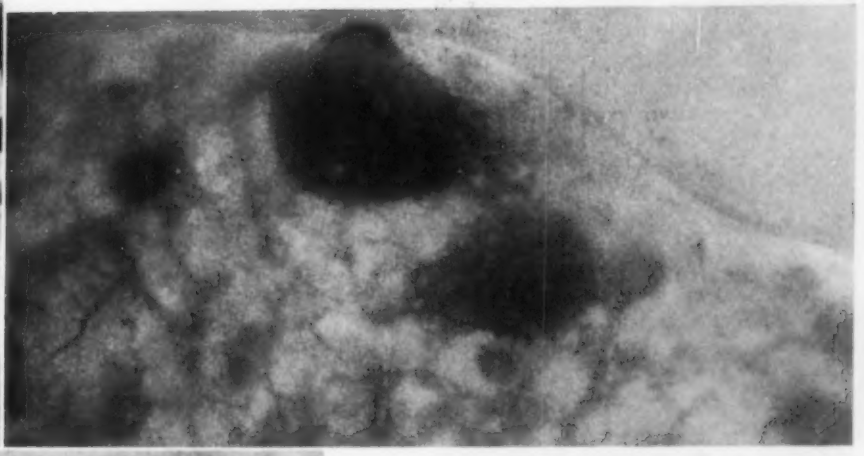
Life goes on with the wriggling, squirming and pushing of the fertilized single cell as it divides, first into two cells, and then into many.

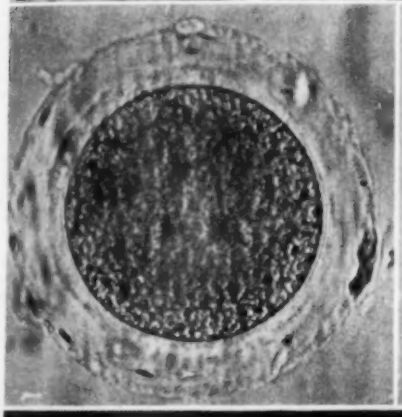
Birth is the climax of the film. The camera sees a close-up of the uterus containing five unborn rabbits, each in its placental sac. Dr. Evans opens one of these sacs by Caesarean section and the baby rabbit is born.

It took two years to make this scientific drama, explained Raymond Evans, Agriculture's motion picture chief. The production will be used in the educational work of the department.

BIOLOGY

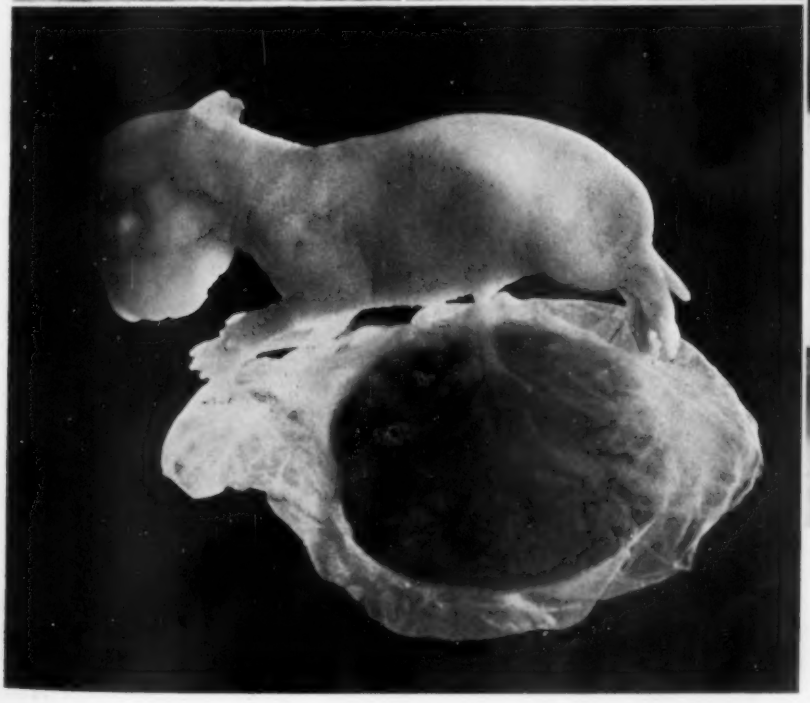
It Is True After All— Easter Bunnies Do Have Eggs





LIFE'S BEGINNINGS

Creation's most vital scenes have been captured on the motion picture screen in a "real life drama" produced by the U. S. Department of Agriculture. Dr. E. I. Evans, left, probes for life's start.



THE EGG

A real rabbit's egg, center left, in the single cell stage and after division. The egg bursts from the ovarian follicle, shown by the dark bulge at top right. Lower, the baby bunny just before and after birth.

From Page 196

"Bone Age" Man

Before the Old Stone Age got well into its stride, there was a "Bone Age" prelude.

This view of man's cultural beginnings comes from Vienna. Prof. Oswald Menghin of the University of Vienna described to the Symposium bone tools found in Europe and Asia. So crudely are these tools worked, he said, that doubt has arisen whether some of these bones were artificially treated at all.

Prof. Menghin's own view is that the bone implements were earliest among the three great streams of culture that developed early in the Old Stone Age. The bone industries had their original home, in his opinion, in northern Asia.

Later was developed the flake-culture, by which Stone Age man learned to strike a flake from a core of stone. Abandoning the core, the stone-worker would shape the flake into a serviceable tool. This flake-culture, the Viennese archaeologist said, probably had its cradle-land in the steppe region of Eurasia.

Still later, was introduced a more advanced technique of stone work. This was the core- or handaxe-culture. Stone Age men chipped off fragments from a piece of rock, and shaped the core that remained into a tool. The home of this Stone Age technique is probably India, said Prof. Menghin.

The cradle-lands for these ancient methods of workmanship are located tentatively by Prof. Menghin in parts of the world where only one of the methods was known. In some parts of the Old World, flake-culture and core-culture existed side by side or mixed together.

Problems of the origin of the Eskimos, and their ancestry in the Old Stone Age were raised by Prof. Kaj Birket-Smith, of the National Museum in Copenhagen. The theory that Caribou Eskimos, who live west of Hudson Bay, are "more or less direct descendants of the primeval Eskimos" was advanced by the Danish anthropologist.

While other Eskimos have adapted their lives to the sea and ice, hunting seal and walrus, the Caribou Eskimos have remained an inland people who hunt caribou.

"An analysis of their culture reveals the fact that they have many elements in common with sequestered areas both in North America and Northern Eurasia," Prof. Birket-Smith said. "And it would seem, therefore, that over the whole of this region there are traces of an old common culture."

This is far from showing the connection of the Eskimos with the Old Stone Age, he added, but it may give a hint of where to hunt for the ancestry of these northern, specialized people.

"It is pleasant to record," he said, "that both the International Congress of Anthropological and Ethnological Sciences and the International Congress of Proto- and Prehistoric Sciences have taken up the plans for an international investigation of this important question."

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PHYSIOLOGY

Gland-Like Action by Nerves Demonstrated in Invertebrates

Nerve Cells Secrete Physiologically Powerful Substances As Do the Specialized Endocrine Glands

THE NERVOUS system is also a glandular system. Nerve cells secrete physiologically powerful substances just as do the cells of the thyroid, pituitary, adrenal, and other specialized glands of the body. Known for some years as a basic fact in the life of backboned animals, this has now been extended to include invertebrates as well, through the work of a German woman scientist, Dr. Berta Scharrer of Frankfurt-am-Main.

Dr. Scharrer reviews briefly the work of pioneers in the investigation of neuro-secretory phenomena of vertebrates, that led to her investigations among the so-called lower animals. Another German, F. W. Kroll, pointed out the presence of gland-like secretions within the brain. The brilliant researches of an American physiologist, Dr. G. H. Parker of Harvard, demonstrated the formation and important functioning of secretions which he called neurohumors at the ends of nerves.

There followed an intensive search for secretory cells and tissues within the nervous centers. During the past nine years a considerable number of researchers, in lands ranging from Spain to Japan, and including Dr. Scharrer herself, have conducted microscopic studies of suspected nerve masses, and have found the sought-for "neuro-glandular cells" to be very widely distributed among vertebrate animals.

During the past three years Dr. Scharrer has been making thin sections of the bodies of all manner of invertebrates—worms, mollusks, myriapods, insects—from a geographic range that includes Naples, the South African coast, and several points in Germany. In the nervous systems of all of them she has found gland-like, secreting cells.

The cells do not seem different, on superficial examination by ordinary microscopic means, from the thousands of other nerve cells that surround them. But upon treatment with appropriate chemical reagents, the protoplasm in the neighborhood of the nucleus is shown to be crowded with what Dr. Scharrer calls "secretion droplets."

All these discoveries that point to a gland-like action of nerves have been the work of a very few years. What their significance may be the work of the next few years may disclose. It is a new window in the wall of the look-out tower of science.

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ENGINEERING

Lamp Has Varying Focus For Use In Different Ways

A VARIABLE focus lamp shade, one which may literally be turned inside out, or changed to any focus by the mere turn of a thumbscrew, has been patented (No. 2,063,504) by three New York City inventors.

With this shade, the light intensity, spread of light, the height to which a wall can be illuminated, may all be increased or decreased at will.

Made of parchment paper, thin sheet metal or plastic, in flat position the shade takes on the appearance of a split ring. One of the split edges can ride over the other, and overlap to any extent by turning a thumb screw on the shade. This causes the shade to take on a conical shape of any desired focus.

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ANTI-GRASSHOPPER "FIELD PIECE"

Invented in Montana and made of an old Ford rear end and drive shaft, an empty oil drum, and some odds and ends of lumber and sheet metal from the farm junk heap is this very effective poison-bait spreader.

ENTOMOLOGY

Worst Grasshopper Plague in Years Forecast for Summer

Since the Year the Sky Was Darkened for Kansas Pioneers, Prospects Have Never Been so Gloomy

GRASSHOPPERS to rival the locust plague of Egypt menace the crops and rangelands of the United States. Unless spring brings persistent, cold rains when the young insects emerge from the eggs now in the ground, 1937 will go down in history as the worst grasshopper year since the sky-darkened days of the Kansas pioneers—maybe even worse. Such is the warning of scientists in the U. S. Department of Agriculture.

They are in position to prophesy this creeping, flying, devouring doom because they have been making a careful survey of the overwintering eggs now in the ground. Never in this century have there been so many—and the winter weather has done them practically no harm. They are ready to hatch as soon as the ground is thoroughly warm.

The prospective empire of the grasshopper covers practically all of the Prairie and Plains regions, and extends into the intermountain areas of Utah and Arizona. Heavy infestations are reported from the foothills of the Rockies in Montana, Wyoming, and Colorado, eastward to central Illinois. The situation in western, central and southern Iowa is reported as especially menacing. There is an isolated region of severe infestation in the northern part of Michigan's lower peninsula.

Federal and state scientists know how to combat the pest, and farmers have learned to serve as shock troops with the poisoned bran bait which government funds have supplied. A bill to provide a war chest for this year's campaign against the insects is now pending in Congress. If the grasshopper plague develops to its full anticipated strength, 84,000 tons (twice a modern battleship's displacement) of poisoned bran will be required for effective control.

Poison Bait Effective

Bran bait is made by mixing coarse bran with an arsenic compound, usually sodium arsenite. Molasses was formerly added, but is now usually omitted. It has been found that sawdust can be substituted for part of the bran—the 'hoppers apparently do not notice that they are being cheated.

The prepared bait is spread thinly over the areas where the young grasshoppers, their wings still ungrown, are crawling. It is sown by hand or with a broadcast sowing machine. An ingenious homemade piece of anti-grasshopper artillery was built by a Montana farmer, and has been copied by several thousand others. It consists of the rear end of an old Ford, with the drive shaft still in place. The shaft is raised up vertically and a light circular tray with radial slats atop is fixed to it. As the wheels are drawn along, the tray whirls round. Bran bait is poured onto the tray from an old oil drum, and thus flung out in a wide swath.

Grasshoppers threaten not only sown crops like corn and the small grains, but also the range plants of the West. Their uncountable billions devour vast quantities of provender that would otherwise become beef or mutton. The rangeland grasshopper problem is aggravated, too, by the fact that some thirty species are involved, whereas the principal mischief done by grasshoppers in the grain-raising areas is the work of less than half a dozen species of the insects.

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GEOLOGY

Violet-Headed, Red-Tailed Meteor Seen From Ship

A METEOR that should be fairly entitled to rate as "extra fancy" is reported in the *Hydrographic Bulletin* of the U. S. Navy, by Third Officer Lagrange of the French steamer *Marigot*.

The fiery visitor had a brilliantly violet head, he reports, about the apparent diameter of the full moon. Its tail "appeared to consist of a powder containing thousands of reddish sparks."

The meteor was observed during a voyage from Rouen, France, to St. Thomas, Virgin Islands.

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GENERAL SCIENCE

Many More Scientists Now; Fewer Great Men of Science

THERE seem to be fewer great men of science now than there were 30 years ago, Dr. J. McKeen Cattell, editor of the journal, *Science*, concludes in a survey of the progress of the biographical directory of American men of science which he also edits. (*Science*, March 12.)

Not that the number of scientific workers in America has decreased, for the number of biographies has increased from 4,000 in the 1906 edition to a possible 30,000 or more in the sixth or 1938 edition.

But Dr. Cattell raises the question as to "whether scientific men as a group are now on the average less able or do less important work than formerly."

"They are less distinguished," he contends; "there may be as many leaders in a savage tribe as in a great nation. The saying 'we cannot see the forest for the trees' may be reversed to 'we can not see the trees for the forest.' "

The geometrical increase in the number of American workers in science is most promising for the future of our civilization, Dr. Cattell observes.

Dr. Cattell, also a distinguished psychologist, was led to first publish the directory because of his researches upon scientific men and the natural qualities and environmental conditions favorable to scientific research.

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BACTERIOLOGY

Ships May Get "Sick" Through Germ Attacks

BACTERIA may play a part in making ships "sick," researches of Dr. Claude E. ZoBell and Esther C. Allen of the Scripps Institution of Oceanography suggest. Dr. ZoBell and Miss Allen immersed sets of glass slides in the ocean and studied the first forms of life that adhered to them. The first "settlers" were always bacteria—as many as 4,500,000 to a square inch of glass in 24 hours.

Nothing would really stick to the glass unless it was submerged from two to four hours. Time is required for the bacteria to cement themselves to the glass, but once they do so running water will not dislodge them.

Larger forms of life, that can be seen without a microscope, did not appear on the slides until they had been submerged for more than three days. Barnacle larvae were occasionally found on slides submerged for a week, during the summer months.

The studies of Dr. ZoBell and Miss Allen suggest that the film of bacteria, which bulks up to as much as nine per cent of the total mass of the living foreign matter clinging to the hulls of ships, may aid larger plants and animals to attach themselves to submerged surfaces. Perhaps it serves as a natural adhesive, or it may possibly supply food during their early life stages. Possibly, too, it may serve as a protection against the various kinds of poison paint with which shipowners try to protect their property against these swarming submarine hitch-hikers.

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MEDICINE

Pneumatic Tube Delivers Radium "Bombs" from Safe

FIVE grams of radium, valued currently at some $200,000, is being blown back and forth in flexible tubes from its storage safe to the treatment table at the Radium Institute in London.

Improved protection for both patient and the scientist is the attained object of the new system. An equivalent of ten inches of lead now shields people from the radium except at the small opening through which the rays penetrate for treating malignant diseases, reports the British medical journal, *The Lancet* (Mar. 6).

The use of large units of radium, the so-called radium bombs, has been limited by inability to provide staff and patient protection. L. G. Grimmett, physicist at the Radium Beam Therapy Research of the Radium Institute, describes how the radium pack is sealed in monel metal tubes each containing 200 milligrams of the precious element and the whole group put in a steel bobbin. This bobbin is blown from the thick-walled storage safe to the treatment mechanism through a flexible tube by air pressure. A simple vacuum cleaner blower provides the necessary pressure.

Once in place in the holding mechanism a system of gears can rotate the steel radium container about both a vertical and a horizontal axis. Also by remote control the opening for the radium rays can be changed to allow different areas at different distances to be treated. Finally there is a special extra shield of lead which swings so that its thickest part lies between patient and the radium.

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IN SCIE

AGRICULTURE

Western Wheat Bad Bet If Soil Not Moist In Spring

PLANTING wheat is a risky gamble in the Western dryland wheat region, unless the soil is moist enough for good germination at seeding time, warns the U. S. Department of Agriculture. Under such circumstances farmers will do better to fallow their fields for a season, unless they are planting some crop other than wheat.

This warning is based on 26 years of carefully conducted experiments at the Kansas Experiment Station, in which the State of Kansas collaborated with the Department of Agriculture. Where the soil was fallowed in each of five spring-drought years, and planted to wheat the following year, the yield after fallowing was more than what the combined yield of the two years would have been, had the oncoming drought been disregarded.

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MEDICINE

Germ-Killing Chemicals In Onions and Garlic

WEEPING over onions may soon be changed to cheering for this and its companion vegetable, garlic.

The very chemicals in onions and garlic which bring tears to the cook's eyes as she prepares the vegetables are now found to have germ-killing powers which may be useful in fighting disease. The germ-killing, tear-starting chemicals have been isolated for the first time by Dr. Richard E. Vollrath, professor of physics, and Dr. Carl C. Lindegren, chairman of the bacteriological department, at the University of Southern California.

The germ-killer from onions is allyl aldehyde, that from garlic is the less poisonous crotonic aldehyde. Tests are now under way to determine the usefulness of these substances in healing infectious diseases due to germs. The fact that onions do not spoil readily and have remarkable resistance to bacterial attack led to the present discovery.

Science News Letter, March 27, 1937

ENE FIELDS

BOTANY-ROENTGENOLOGY

New Glimpse of Lily's Beauty Won by X-Rays

See Front Cover

"TRANSPARENCY" is a beauty often praised in white lilies, though the term is always recognized to be of figurative rather than literal application. But it is made literally true by a skilled X-ray artist, Miss Francis Mildred Davis, of Santa Monica, Calif. Arrangement of flower parts, even within the unopened buds, and the delicate veining of leaves and petals, are all brought out on her film.

Science News Letter, March 27, 1937

PSYCHOLOGY

Every Normal Youngster Is a "Problem Child"

EVERY child is a problem child at some stage of his young life but most children outgrow being problems in behavior as they outgrow their clothes. Parents should be comforted by this thought and psychiatrists, especially those dealing with children, should be guided by it, Dr. Edgar A. Doll, Director of the Training School at Vineland, N. J., pointed out in his presidential address before the American Orthopsychiatric Association meeting in New York.

It is normal for children to be problems—to tell lies or to resist discipline—because the average child does such things at a certain stage in his development. Parents should adopt a policy of "watchful waiting" over such problems. If the child does not outgrow the condition, the aid of the psychiatrist should be sought. Psychiatrists themselves, Dr. Doll cautioned, should remember this "normal abnormality" exists and plan their treatment of the child so as not to fix his attention on his abnormal behavior to such an extent that he cannot forget it.

Caution is necessary in planning the lives of children, Dr. Doll continued, especially considering the difficulties adults have in planning their own lives successfully.

"Nowhere is man's feebleness more evident than when he undertakes to say what the world should be like. These are great days for the planned society. Are we equal to the task?" Dr. Doll questioned. "In modern terms, what is social security? Do we want it even if we can have it?

"Yet here again we need not be fatalistic or negative. Civilization grows and develops just as the child does. These social changes require accommodation and adjustment on the part of ourselves and our children. Some of these outcomes are fairly evident in the circumstances and cooperation with the inevitable may be a virtue not to be lightly disregarded."

Science News Letter, March 27, 1937

GEOLOGY

Collecting Meteorites Is Hobby of a Biologist

A COLLEGE professor whose hobby of collecting meteorites turned out to be his major task in life has given the city of Denver one of the world's largest and most complete collections of these visitors from outer space.

Prof. H. H. Nininger, trained as a biologist but now curator of meteorites at the Colorado Museum of Natural History, struggled for seven years while teaching at McPherson College, Kansas, to persuade science that a systematic survey of the fall of meteorites over wide sections of the earth would be useful.

Finally in 1930 he gave up his college teaching and concentrated on the plan. Today some 60,000 square miles of the midwestern plains have been probed for these outer space visitors to the earth. Scientists attending the coming summer meeting of the American Association for the Advancement of Science in Denver will view the great meteorite collection on display at the museum.

Among the outstanding meteorites to be exhibited is the largest one of iron that has yet been taken from the famous Meteor Crater near Winslow, Arizona, where in prehistoric times a giant hole was dug in the earth by an impacting meteor. Also there is the renowned Bruno meteorite from Canada which clearly shows on its surface the conflict of this meteorite with the earth's atmosphere as it plunged to earth. Finally there will be shown the model of the only meteor crater ever completely excavated, the crater near Haviland, Kansas, studied by Prof. Nininger in 1933.

Science News Letter, March 27, 1937

MEDICINE

Medicine Man Got Results; He Treated Simpler Ills

PHYSICIANS and laymen alike in this age of science are generally scornful of the medicine man, witch doctor or shaman of primitive society. Yet the record of "cures" of the medicine man puts the modern scientific physician to shame, it is pointed out in the current bulletin of the Associates in the Science of Society at Yale University.

The medicine man was a creature of superstition but he got results. He cured his patients.

"Careful examination of the cases," states the bulletin, "gives the distinct impression that the shaman's record of cures was, if anything, better than that of the modern physician."

The explanation of this apparent paradox is simple. The shaman or medicine man almost never had to deal with the incurable, degenerative diseases that the modern physician treats. Cancer, heart disease, hardening of the arteries are the chief causes of death today but these diseases do not appear until middle or old age. In primitive society very few people live long enough to be afflicted with these conditions. Primitive man is or was usually killed in warfare or by accident in the prime of his life.

The medicine man rarely saw a case of cancer or hardening of the arteries and he rarely attended childbirth. Deaths of infants and mothers in childbirth, consequently, are not charged up against him as they are against the modern physician.

Communicable diseases, such as yellow fever, bubonic plague and even influenza, were not generally a problem for the primitive medicine man. Communicable diseases are spread by travel and primitive man did not travel much compared with modern man.

The medicine man's big success was due to the twin facts that he dealt largely with social or psychological problems and that he was peculiarly well equipped to deal with just such problems and the ailments that arise from them. He used the terms of witchcraft instead of psychiatry and psychoanalysis, but he knew his patients and their background, he had insight into their problems, and he had their complete confidence. In this last respect, it is pointed out, the medicine man of primitive society enjoyed an important advantage over the family physician.

Science News Letter, March 27, 1937

ASTRONOMY

Mercury to Show Itself

Elusive Planet Will Offer Best Opportunity for Observation During Brief Visit After April 19

By JAMES STOKLEY

WHEN Mercury makes its brief appearance for a few days before and after April 19 we shall have the best opportunity this year of seeing this elusive planet. Most people have never seen it, and some astronomers never had the chance. For instance, the great Copernicus, who showed that Mercury and the earth are both the same kind of body, is said never to have viewed it. It is never seen very high in the sky, and the low fogs of his native Poland were always a hindrance.

Mercury is smaller in size than any of the other planets, except Pluto. Its diameter is only 3,100 miles, as compared with 7,927 for the earth. On the average it is 36,000,000 miles from the sun, but it has, again with the exception of Pluto, the most eccentric of the planetary orbits. Sometimes it comes within 28,500,000 miles of the sun, while it may draw as far as 43,350,000 miles away.

Every 88 days it goes around the sun, so its distance from the earth varies tremendously. At the beginning of this month it is about 115,000,000 miles from us. When visible, about the 19th, it will be around 85,000,000 miles distant, while at the end of April it will be at 60,000,000 miles.

Though the year of Mercury, the time it takes to encircle the sun, is 88 days, the earth also goes around the sun in the same direction, but more slowly, and Mercury catches up with us every 116 days. The time when Mercury is between the sun and earth is called inferior conjunction, and then it is not visible, because it is lost in the solar glare. About 58 days later, the three bodies are again in line. This time the sun is in the middle, and then Mercury is said to be in superior conjunction.

Between these conjunctions it draws some distance away from the sun, as we see them in the sky. After inferior conjunction, it is west of the sun, at "greatest western elongation." Then it moves ahead of the sun, in its daily motion across the sky, and rises before sunrise. It is visible as a morning star. After superior conjunction it is east of the sun, which it follows in daily motion, so it sets after sunset, and is an evening star. This is the time of its "greatest eastern elongation," which happens on April 19.

But some other factors may prevent its visibility. Obviously, if either elongation occurs when it is at its smallest actual distance from the sun, it does not appear as far to the east or west as when at the largest distance. Even under the latter circumstances, its apparent separation from the sun is only 28 degrees. This is a little less than a third the distance from horizon to zenith, the point of the sky directly overhead.

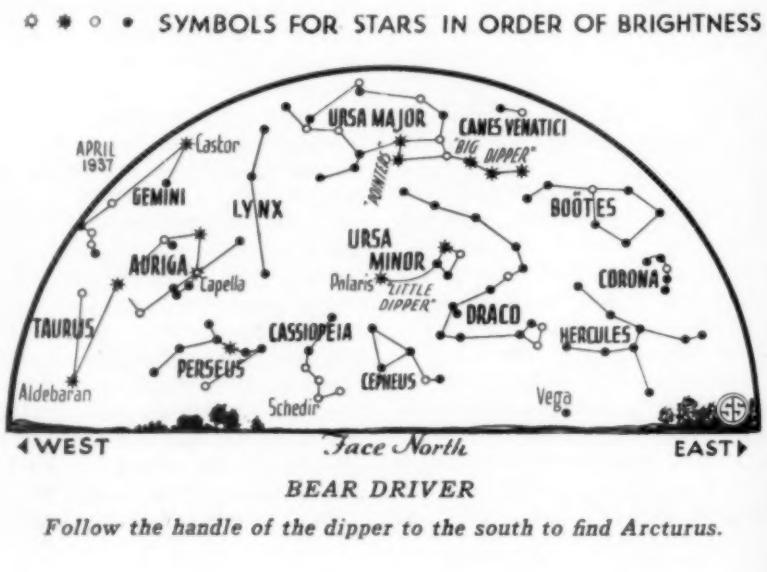
Also, the planets move along a narrow band called the Zodiac, in the center of which lies the ecliptic, the path of the sun among the stars. This line goes partly through the southern half of the sky, partly through the northern. In the autumn evenings it makes a low angle with the western horizon. Thus, at an eastern elongation of Mercury in the fall of the year, even though the planet may be the greatest distance away from the sun, it is only a short distance above the horizon when the sun is setting, and it vanishes very soon afterwards. It can never be seen to advantage as an evening star during these months.

In the springtime, however, the ecliptic makes almost a right angle with the horizon. Mercury is then, at an eastern elongation, as high as it can be at sunset, and sets at its latest. This happens this month. On the 19th, Mercury will be 32,294,000 miles from the sun, actually less than average distance, and the separation of the two bodies in the sky only 20 degrees. But despite these disadvantages, the planet should be easily found.

If the time should ever come when rocket propulsion makes inter-planetary travel a fact, explorers of space will not find Mercury very hospitable. Its day is the same length as its year, that is, it turns once on its axis as it goes once around the sun, so that most of one hemisphere is always illuminated, the other always dark. Actually, there is a certain amount of swinging.

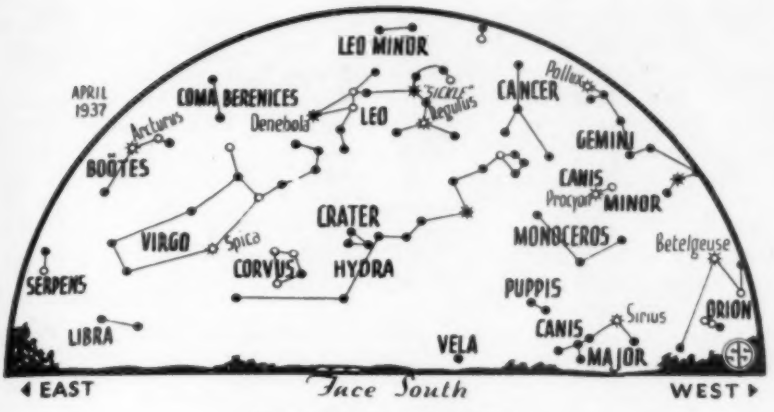
Only about 37 per cent of the surface has perpetual daylight, and the same proportion continual darkness. The rest has alternation of day and night, but of a very strange kind. To a Mercurian living in the middle of these regions, the sun would rise every 88 earth days, climb to a height of 24 degrees, then sink below the same horizon at which it rose. It would be visible to him about half the time.

On these parts of Mercury the average temperature would be about the same as on the earth, but the extremes might vary far more than they do for us. Mercury has practically no atmosphere to mitigate the sun's heat, or to conserve it after sunset. In the regions always exposed to the nearby sun the



BEAR DRIVER

Follow the handle of the dipper to the south to find Arcturus.



MERCURY IN WEST

Appearing too early to be shown on this map, this rarely seen planet may be observed soon after sunset in the west.

surface of Mercury reaches a temperature far above the boiling point of water, while in the opposite portions it is almost at the absolute zero of outer space. This is shown by actual measurements made at the Mt. Wilson Observatory.

Venus, Mars and Mercury are passing planetary visitors in the sky this month but none of them are visible throughout the entire evening and they are not shown on the accompanying maps. These maps depict the appearance of April skies at 10:00 p.m., April 1; 9:00 p.m., on the 15th and 8:00 p.m. at the end of the month.

At the beginning of April Venus is low in the western sky at dusk but quickly moves westward. On the 17th it is in line with the sun and cannot be seen. After a few weeks more, it will begin to appear in the eastern sky, before sunrise, that is, as a morning star.

About 10:00 p.m. in the middle of the month, Mars rises in the east and can be seen, as a brilliant red object, by 11:00 o'clock. It is in the constellation of the Scorpion, familiar in the southern evening sky of summer. The brightest star in the scorpion is called Antares, which means "rival of Mars," a name applied because it also has a red color. But at present Mars is several times brighter than its rival, and seems to have the advantage.

As for the other planets, Jupiter appears in the east about midnight, in the constellation of Sagittarius, the archer, east of the scorpion. About two and a half times as bright as Mars, it should be detected without trouble. Saturn is now almost in line with the sun and cannot be seen at all this month.

The stars now visible in the evening present a typically springtime appearance, with the Sickle very appropriately hanging high in the south. This is part of Leo, the lion, and the bright star Regulus is at the end of the handle. About as high, in the northern sky, is the great dipper, in Ursa Major, the great bear. The "pointers" indicate the direction of Polaris, in Ursa Minor, the little bear, which is below.

Crow

If the curved handle of the dipper is followed to the south, one comes to Arcturus, in Bootes, the bear driver, and then to Spica, in Virgo. Beyond Spica is a group of four stars forming Corvus, the crow. Sometimes this is called the "mainsail," from its shape.

Orion, so brilliant during the winter months, has descended low into the west, along with the two dogs, Canis Major and Canis Minor, which follow him. Betelgeuse is the uppermost star in Orion, while Sirius and Procyon mark the dogs. Above Canis Minor are the twins, Gemini, with first magnitude Pollux. Aldebaran, in Taurus, the bull, is just north of Orion.

In the northwest is Auriga, the charioteer, with brilliant Capella, and below this Perseus is apparent. To the right of Perseus is Cassiopeia, a letter W on one side. Low in the northeast is a bright star, Vega, all that can now be seen of Lyra, the lyre, a group that will shine at the zenith on summer evenings.

During April the moon goes through its phases as indicated below. On the 12th, it will be at perigee, or nearest earth, only 223,250 miles from us. Apogee, its greatest distance of the month, comes on the 27th, with 252,320 miles. On the 27th also, at 10:27 p.m., when two and a half days after full, it passes within about twice its own diameter to the south of Mars.

Phases of Moon

			E.S.T.
Last quarter	April	3	10:53 p.m.
New	"	11	12:10 a.m.
First quarter	"	17	3:34 p.m.
Full	"	25	10:24 a.m.

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PHYSICS

New Trap For Atoms In Photographic Film

THE SENSITIVE emulsion of photographic film, such as records permanently images of yourself and your friends, provides a new tool of science holding the possibility of aiding research on cosmic rays and the disintegrations of the atom.

One basic device of scientists for interpreting the multitudinous debris thrown out in atomic collisions is the Wilson cloud chamber. This machine makes visible for photographic reproduction the tracks of the charged collision of particles as they speed through the saturated water vapor of the apparatus.

Moreover, when the Wilson cloud chamber is used in conjunction with a strong magnetic field from the poles of an electromagnet the charged particles are bent in their paths. Negatively charged particles curve one way and positively charged particles the other, so that a means is thus found for distinguishing between the two types. Moreover, the radius of curvature of the bending is an index of the energy which the particle has. Such matters are highly important in cosmic ray studies and in research on atomic disintegration and bombardment of the nucleus.

It was with such an apparatus, as only one example, that Dr. Carl Anderson discovered the positron, in recognition of which he won the joint award of the 1936 Nobel Prize in physics.

The magnetic field of the Wilson cloud chamber easily distinguishes between positively and negatively charged particles—the electrons and positrons, deuterons, protons and alpha particles—but as yet has difficulty in helping decide whether a "positive" track is due to a proton (charged nucleus of a hydrogen atom) or an alpha particle (charged nucleus of a helium atom).

These two particles differ in mass by a factor of four, but may very well have the same appearance in their curved path. This is because particles having the same energy show the same amount of curvature in the magnetic field. Energy, it should be realized, is equal to the

product of the square of the velocity multiplied by the mass, so that a light proton traveling with twice the velocity of a heavy alpha particle would show the same amount of curvature in the track.

Increasingly in cosmic ray and nuclear disintegration research the need has been felt for a simple, sure way to distinguish between the tracks of such particles and also, to differentiate the newer deuteron particles which are the charged nuclei of hydrogen's heavy isotope of mass two.

Prof. T. Russell Wilkins of the physics department of the University of Rochester has now provided this new tool in his studies of the kind of tracks which each of these particles make when they hit directly the emulsion on a photographic plate. So simple is the process that one only has to wrap up the photo plates in the boxes as they come from the maker and expose them to the particle radiation being studied. The skill comes in the photomicrographic enlargements and their interpretation. Knowing the temperature of the emulsion at the time of the experiment, it is possible for Dr. Wilkins and his coworkers to distinguish between protons and alpha rays. For example, in an alpha ray track the little silver grains "developed" by the particle are spaced about 1.47 microns (58 millionths of an inch) apart. Protons, in contrast, show a grain spacing of about 2.16 microns (86 millionths of an inch). The difference is comparatively large and serves as a valuable aid to differentiation between the two particles.

Just recently Dr. Wilkins, cooperating with Dr. J. M. Cork of Michigan University, has obtained a deuteron particle track in an emulsion for the first time.

Science News Letter, March 27, 1937

GENERAL SCIENCE

Civilization Fails in Proper Absorption of Science

DISSATISFACTION with the manner with which society has met and absorbed scientific changes was expressed in a series of four lectures in Princeton by Dr. Frank Baldwin Jewett, president of the Bell Telephone Laboratories.

Speaking on "An Engineer Looks at the Social Implications of Science," he said of the government, "the political government, since it must of necessity be organized to do a vast number of things, is less likely to be competent in a highly technical matter such as the development and application than is a private organization designed and operated solely for that scientific purpose."

Dr. Jewett declared that although the government cannot directly use the services of engineers and scientists "because their field is one in which they can operate with entire absence of certain factors normally present and controlling in other human affairs," still the government should make more use of the knowledge of these men.

Speaking from an international viewpoint, Dr. Jewett asked, "How will the world of those who wish to retain what they have protect themselves against the degrading effects of those who, equipped with the same tools, are struggling to elevate their standards?"

"One has only to visit the more recent of the vast technical establishments of the Orient, particularly those of Japan, to be acutely conscious of how far the migration of applied science has carried the world since the days of its beginning, and how pregnant with social and political problems the future is."

To meet these problems, he recommended the inclusion of science training in the education of every student, "with the thought that thereby they and the society they are to form will be better equipped to handle the problems of science and particularly the problems created by science."

He made "a complete refutation of any claim that applied science has reduced gainful employment," and citing the automobile industry, which threw out of work many drivers, hostlers, wagon-builders, and farm laborers, he pointed to the mushroom growth of allied industries of the automobile that have in the end increased the total of employed labor.

One evil of science Dr. Jewett showed to be that "frequently the appeal of some new thing is such as to offer a lush field for the get-rich-quick artists or those who pander to the baser sides of human nature." He added that such exploiters must be safeguarded against, for "we no longer have opportunity to become fully acquainted with a new thing before its mass impact has confronted us with a major problem of social control and legal regulation for which we have no established guides."

Science News Letter, March 27, 1937

GENERAL SCIENCE

Science on Radio Chains Totals 2 1/4 Hours Weekly

NATION-WIDE radio networks carry 2¼ hours of science broadcasts each week. In the schedule below, times given are Eastern Standard. CBS means Columbia Broadcasting System and NBC means National Broadcasting Company. Local stations carrying these programs can be determined by reference to programs in local newspapers.

Tuesdays

3:45 to 4:00 p.m. HAVE YOU HEARD?—Curious and interesting facts in natural science, presented under the auspices of the Federal Office of Education. NBC Blue Network.

5:00 to 5:30 p.m. YOUR HEALTH—Dramatized health broadcasts under auspices of the American Medical Association. NBC Blue Network.

5:15 to 5:30 p.m. SCIENCE SERVICE SERIES—a notable scientist is interviewed each week by Watson Davis, director of Science Service. CBS Network. (*See page* 207.)

6:00 to 6:15 p.m. SCIENCE IN THE NEWS—Arranged by the University of Chicago Educational Council. NBC Red Network.

Thursdays

2:00 to 2:15 p.m. ACADEMY OF MEDICINE—Medical programs, arranged by the New York Academy of Medicine. CBS Network.

Saturdays

5:30 to 5:45 p.m. DRAMA OF THE SKIES—Dr. Clyde Fisher of the Hayden Planetarium, speaking on astronomical subjects. CBS Network.

Sundays

11:30 to 12:00 a.m. THE WORLD IS YOURS—Dramatizations based on Smithsonian Institution activities, arranged by cooperation with the Federal Office of Education. NBC Red Network.

Science News Letter, March 27, 1937

ZOOLOGY

Strange Hybrid Sheep Results From Bighorn Cross

A COUPLE of years ago a band of range sheep belonging to the Pitchfork Ranch in Wyoming was grazing under the shadow of the Rocky Mountains, when a bighorn ram from a flock of wild mountain sheep came down from the high peaks and mingled with the domestic ewes.

For years, the stories current among sheepherders of the West about the crossing of the bighorn mountain sheep with ewes of domestic flocks have been passed off largely as fanciful tales of a lonely shepherd's imagination. Rarely, if ever, has a specific case been produced. A few years ago a sheepman of Colorado sent five newly born lambs representing a cross between a Rocky Mountain bighorn and his domestic sheep to the Colorado Museum of Natural History. These had died within a few hours of birth.

Other similar cases have been reported, but in every instance the hybrid lambs did not have sufficient vitality to survive more than a few days at the most.

At the time that the bighorn ram strayed into his flock, the herder told his camp tender about it and predicted that at least one lamb would make its appearance during the next few months. As soon as the herder had seen the intruder he had chased him back to his own kind far up the snow-capped peaks. Early in the following spring, an odd-looking lamb made its appearance and was promptly taken to the home ranch, for early April is no time for a young lamb to be out on the storm-swept ranges of Wyoming. The balance of the ewes were not to have their lambs till a month later.

For the first few weeks of its life the lamb was weak and sickly and two months passed before it began to look strong and thrifty. It had the characteristic brown spots of the mountain sheep lamb and its coat seemed to be part hair and part wool. The coat of the bighorn sheep is dark-colored hair, not unlike that of a deer.

The actions of this strange youngster have never been those of a domestic lamb. It has the characteristics of its male parent. The lamb prefers to mix with a small herd of goats on the ranch and frequently jumps up on a pile of logs or on the roofs of the low ranch buildings. With apparently no effort at all it can hop over a six or seven foot corral fence. Another curious fact about this creature is that its tail is only about one-third the length of the tail of a domestic lamb.

It is a well known fact that the bighorn sheep is one of the hardiest of animals, grazing as it does all the year round on the roof of the continent. It is not beyond possibility that this cross might be the start of a new breed of domestic sheep that will stand the rigors of Wyoming or Montana winters even better than the merino or rambouillet ewes.

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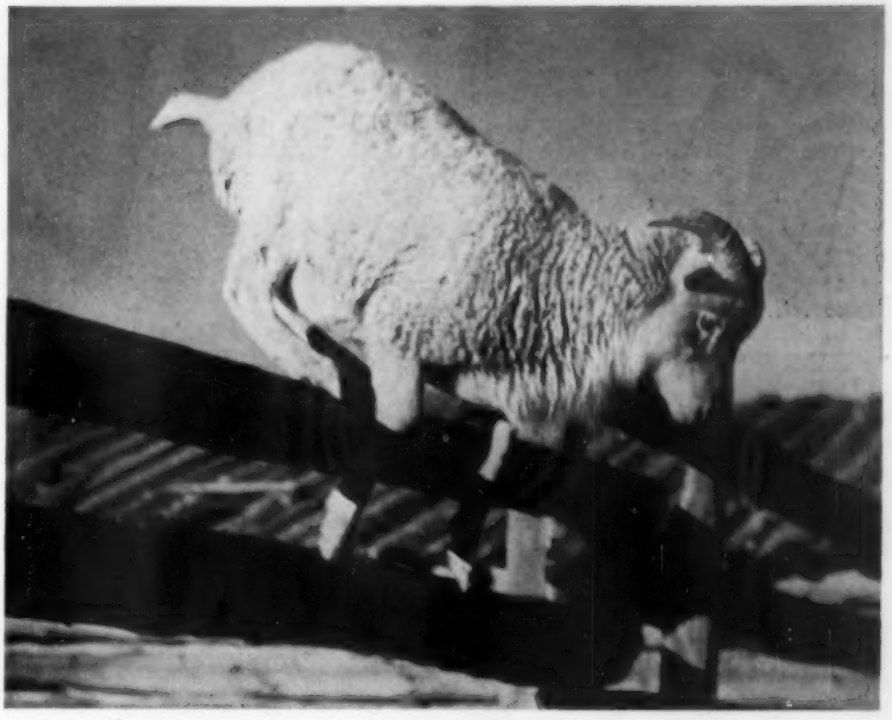


OVER THE TOP

PLANT PHYSIOLOGY

To Plants Red Light Means "Go" But Green Is "Stop" Signal

RED LIGHT doesn't mean "stop" to plants in the food-manufacturing business; it means "go ahead." Green light comes nearer to signifying "stop" to such plants. Blue is another "go ahead" light.

These facts were developed in a research project by W. H. Hoover of the Smithsonian Institution. He caged young wheat plants in a glass vessel, through which air could flow at a controlled rate. He passed the light received by the plants through filters that took out all but certain chosen wavelengths, all maintained at the same level of energy-intensity.

The ingoing amount of carbon dioxide, out of which green plants manufacture primary foods, was definitely known. Analysis of the outgoing air showed how much of it had been removed by the plant in the food-manufacturing process. The less carbon dioxide coming out while a given color of light was on, the more efficient that light as an energy source for the plant's work.

Most efficient of all wavelengths tested was found to be in the red, close to the border of orange, at a wavelength of 6550 Angstrom units. Low efficiency was reached at about 5500 Angstroms, in the green. A second peak of efficiency came in the blue end of the spectrum, at a wavelength of 4400 Angstroms. Dull red light at less than 7500 Angs-

troms was of no use to the plants in Mr. Hoover's experiments, but they could still manufacture at least a little food under the invisible radiation in the lower ultraviolet region, up to about 3650 Angstroms. The limit of visible violet light is about 3900 Angstroms.

Science News Letter, March 27, 1937

AERONAUTICS

Airships to Make Their Own Ballast While Aloft

ZEPPELINS of the future will be able to take off without ballast, and once in the air will "manufacture" water, with a new reaction chamber invented by Ludwig Schirmer of Berlin. The fundamental idea is very simple: hydrogen and hydrogen compounds are present in the airship's lifting gas; the air contains plenty of oxygen to combine with them and form water. Thus instead of valving gas and thereby losing valuable reserve "lift," Herr Schirmer's invention will transform it into ballast, thus making a double gravitational gain. It is the reverse of lifting oneself by the bootstraps.

Science News Letter, March 27, 1937

PUBLIC HEALTH

Midwest Conquering Goiter With Iodine in Salt Cellars

Communities Need to Exercise Caution, However, That Salt Contains Iodine in Proper Amounts

FAMILIES in the Midwestern "goiter belt" began filling their salt shakers with iodized salt ten or twelve years ago.

The happy result is that in these homes goiter has practically disappeared.

Nobody disputed Dr. David Marine when he said twenty years ago that a normal thyroid gland could be found only along the seacoast.

Michigan and Ohio can successfully refute anyone who makes that statement today.

There is Midland County, Michigan, where in 1924 one-third of all the school children showed a well-developed goiter and where a questionable enlargement of the thyroid was seen in almost every child.

Now in Midland County anatomically normal thyroids are found in 90 per cent of the children. They have been taking iodized salt to make up for the deficiency in food iodine in that locality.

In this same county live five families whose doctor warned them against iodized salt, saying the children would develop acne. These families followed their doctor's advice for from three to six years.

When the goiter committee from the state health department made a statewide survey recently, it was especially interested in these families. The children did not have acne—it is true—but eight of them had moderately enlarged, soft, spongy hyperplastic goiters.

Recently the committee examined 3,000 children who had been using iodized salt regularly for years. Less than 2 per cent of them had goiter. Nor did the committee find more cases of acne than would be expected.

Dr. O. P. Kimball of Cleveland, who reports (*Journal, American Medical Association, March* 13) on the program of goiter prevention in Michigan and Ohio, tells of an interesting contrast in two Michigan cities.

In Houghton County are Houghton and Calumet, towns thirty miles apart. Calumet is a mining town and during 1932 the copper mines closed. Many families were on relief and only bag salt (not iodized) was given to relief families. While in Houghton the percentage of goiter cases remained low, in Calumet without the iodized salt, which was the only source of food iodine in half of the homes for three years, endemic goiter became proportionately as prevalent as it was before prevention was initiated.

In Detroit the incidence of goiter dropped from 35 per cent in 1924, when the goiter prevention program was begun, to 5 per cent in 1936. However, in Cleveland the drop was from 31 per cent to only 18.5 per cent.

The city health department investigated and found that two local salt manufacturers were labeling their various brands of salt "iodized" when it contained only one-third of the amount of iodine stated on the label and one brand contained no iodine at all.

"In each study made in various cities," declares Dr. Kimball, "we found the iodine content of nationally advertised brands and the trade brands prepared by these manufacturers for other companies to approach closely the amount advertised."

Dr. Kimball advises every state in which goiter is endemic to educate the public to use iodized salt. He further urges state health departments to analyze every brand of iodized salt at least every other year.

"Attempts to interest and educate the public need not be aimed solely at the deformity of the neck," Dr. Kimball explains.

"One should think of the number of cases of feeblemindedness, the many cases of boys and girls who do not mature normally through puberty, the many cases of cretinism and myxedema, and the thousands of large tumorous goiters with an occasional cancer, each of which is only a sequela of endemic goiter.

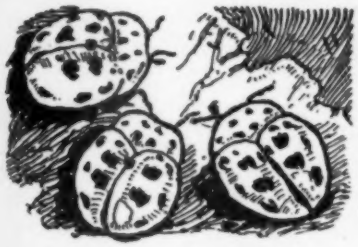
"For over twenty years Dr. Marine and I have consistently emphasized the importance of the replacement of the food element iodine. In meeting this deficiency we are preventing infinitely more than meets the eye, the goiter."

Science News Letter, March 27, 1937

BIOLOGY

NATURE RAMBLINGS

by Frank Thone



Unknown Neighbors

WE ARE very persistent in reading human perceptions and human reactions into all manner of non-human creatures. God, we say, made man in his own image; but man insists on seeing *his* own image in everything animate.

Thus, we use every day such terms as "insect enemies" and "insect allies." By the former we mean insects that harm us in person or property; by the latter, insects that in one way or another attack these "enemies."

Yet it is highly doubtful whether any of these small animals are consciously either trying to harm us or to help us. Most of them do not even know that we exist, for the vision of most insects is quite imperfect. And even of those that see us clearly (as clearly as an insect can see anything), it is practically certain that they have no means of understanding who we are or what we signify in their lives. Our odor means simply "food" to a mosquito; our sudden movement signifies "danger, get out!" to a fly.

Of course, the great majority of insects which we classify as enemies or allies never get anywhere near a human being. They are born and fly, breed and die, as unconscious of our important selves as a Hottentot is of the Sphinx. We may help along the insects we favor, like ladybird beetles in citrus groves, or bees in a beehive. But they never see the *deus ex machina* who moves them where food is plentiful, or protects them from cold in the winter. Our ministrations to them are as much a part of the course of nature, so far as they are concerned, as weather is part of the course of nature for us.

Similarly, man may move across a potato field with a spraying machine, or swoop over a forest or cotton plantation in a low-flying airplane releasing a cloud of dusty death like a plague-bringing god of an old heathen pantheon. The potato beetles, boll weevils, budworms or other pest merely devour the arsenic or the fluorine, feel the fatal touch of the rotenone or the nicotine, and so die. Why they perish, who should desire their death, is a thing beyond their knowledge. Indeed, so far as we have any way of judging, they are not even capable of asking, or of wondering what is the matter.

They live, and we live; our lives and deaths inter-react continually; yet between their world and ours there is a great gulf fixed. As yet, we have hardly put a toe on the first plank of a bridge of understanding, to cross it.

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DENTISTRY

Geography Gives Clue To Prevention of Tooth Decay

DENTISTS seeking ways to prevent caries or tooth decay took a lesson in geography at the meeting of the International Association for Dental Research.

Latitude, hardness of drinking water and nearness to mining regions all seem to have an effect on tooth decay, Dr. Clarence A. Mills, professor of experimental medicine at the University of Cincinnati, told the dentists.

The amount of tooth decay in American school children increases steadily throughout the United States as the distance from the tropics increases, Dr. Mills said. The increase is roughly 15 more decayed teeth per 100 children for each added degree of latitude, "or well over 200 per cent from Gulf to Canadian border."

Dr. Mills explains this as being due to the decreased amount of ultraviolet light reaching inhabitants of the more northern latitudes. The only exception to the increase of tooth decay toward the north is found in the northern Plains section, where the sunlight is more plentiful than in other northern regions of the country. The part played by ultraviolet light in stimulating development of strong bones and teeth has already been shown, Dr. Mills pointed out.

Hard water is good for the teeth, even though it makes dishwashing, laundering and other household chores more difficult and presents a serious problem to factories. Dr. Mills found almost 30 per cent more caries among the children of cities using river and lake water than among those using water from wells or springs, even though the mean latitude of the two groups was the same. The reason for this, he believes, is the degree of hardness of the water. His data show that caries diminishes as hardness increases. Animal studies have already shown that the calcium and magnesium supply in the drinking water and food affect bone and tooth formation and tooth decay.

A high caries rate is found in mining regions in Pennsylvania and on down the Ohio River. This may be accounted for by the millions of tons of sulfuric acid which seep each year from the mines into Pennsylvania streams and on down the Ohio. Besides corroding boilers, metal pipes and river craft, Dr. Mills believes this acid may lead to tooth decay in persons drinking the water. Sulfuric acid will liberate calcium from bones and teeth in large amounts, studies on lead poisoning treatment have shown. This point and a possible relation between amount of tooth decay and amount of oxidized sulfur from coal combustion in the air of smoky cities need to be investigated further, Dr. Mills suggested.

Exploring geographers know that primitive people usually have good teeth until they come in contact with civilization, and that one of the first articles of trade brought to such peoples is salt. Laboratory scientists know that when animal diets contain large amounts of salt, calcium and phosphorus, important bone constituents, are excreted from the body in larger amounts. Recalling these two facts, Dr. Mills made a rough survey of salt use and tooth decay. He found that children and adults who salt their food heavily have more decayed teeth. He is planning more extensive studies on this possible causative factor in tooth decay.

A dental survey among school children made by the U. S. Public Health Service formed the basis and starting point of Dr. Mills' investigations of the relation of geography to tooth decay.

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RADIO

March 30, 3:30 p.m., E.S.T.

CLOTHES AND THE CHILD—Miss Ruth O'Brien of the U. S. Bureau of Home Economics.

April 6, 3:15 p.m., E.S.T.

KNIGHTS IN ARMOR—Steven V. Grancsay of the Metropolitan Museum of Art.

In the Science Service series of radio discussions led by Watson Davis, Director, over the Columbia Broadcasting System.

•First Glances at New Books

Psychiatry

ADVENTURES IN ERROR—Vilhjalmur Stefansson—*McBride,* 299 p., $3. An explorer discusses such topics as standardization of error, the pleasures of buncombe, and travelers' tales, and deplores the fact that the most loving parents take the greatest care to surround children from their birth not with truth but with deception. Those who read this delightful book will find that in so doing they have found adventure but made no error.

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Psychology

REASONS FOR ANGER—Robert Briffault—*Simon and Schuster,* 265 p., $2.50. The author of *The Mothers* now gives us these fourteen essays on the theme of man's stupidity. The title of the book is misleading. The work is not about anger, but serves to reply to the query of a critic concerning a previous book by the author, "But why get angry about it?"

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Engineering

GEAR DESIGN SIMPLIFIED—Franklin D. Jones—*Industrial Press,* 139 p., illus., $3. A machinists' and engineers' book with directions and formulae for cutting all those myriad types of gears about which the layman never hears, but which makes his wheels go round so smoothly.

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Physiology and Health

BOY'S BOOK OF STRENGTH—C. Ward Crampton—*Whittlesey,* 257 p., $2. Advice on diet, exercise, health habits and explanation of how the body works are woven together in a lively, informal style that is easy to read and easy to remember. Dr. Crampton's long experience with boys has taught him what they want and need to know and how to interpret medical and health facts to them.

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Geology

GULF COAST OIL FIELDS, A SYMPOSIUM ON THE GULF COAST CENOZOIC—Fifty-two authors, edited by Donald C. Barton and George Sawtelle—*Amer. Assn. Petroleum Geologists,* 1070 p., illus., $4; to members and associates, $3. A massive volume, sparing nothing to tell its story completely, solidly bound for hard use, that will unquestionably be on the "must" list of every School of Mining where petroleum matters at all, as well as on the office table of every working oil geologist in the great Gulf region—and probably lying open most of the time, too.

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Biology

CULTURE METHODS FOR INVERTEBRATE ANIMALS—Paul S. Galtsoff and others—*Comstock,* 590 p., $4. The teacher of biology, who must have a stock of protozoa, or worms, or insects on hand at the right season, all ready to "perform," and who has all too often found his cultures *zugrundegegangen* and his vivaria desolate, will hug this book to his bosom. It is a compendium by experts in everything from amebae to ascidians, wherein they tell the many tricks of their many trades. He who uses it well and applies the knowledge therein will always be able to reach into jar or cage and bring up something wiggling.

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Child Care

FEEDING, DIET AND THE GENERAL CARE OF CHILDREN: A BOOK FOR MOTHERS AND TRAINED NURSES (3rd rev. ed.)—Albert J. Bell—*Putnam,* 316 p., illus., $2. Specific information is given concisely on a large number of subjects, ranging from feeding formulas and typical menus to accidents and diseases of childhood and selection of children's books.

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Hygiene

HEALTH CHATS—Logan Clendening—*David McKay,* 390 p., $2.50. In his usual lively, readable style, Dr. Clendening writes about diets, cosmetics, foot ills, and many other specific health or disease problems.

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Child Care

SUBSTITUTE PARENTS, A STUDY OF FOSTER FAMILIES—Mary Buell Sayles—*Commonwealth Fund,* 309 p., $1.75. A book of particular interest to those who have the responsibility of finding homes for children who are in need of them. The second part of the work is devoted to case studies.

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Psychology

STUDIES OF CEREBRAL FUNCTION IN PRIMATES—C. F. Jacobsen — *Johns Hopkins,* 68 p., $1.25 A technical report of valuable experiments conducted as part of the program of the Yale Laboratories of Primate Biology. Comparative Psychology Monograph No. 63.

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Psychoanalysis

THE PROBLEM OF ANXIETY—Sigmund Freud—*Norton,* 165 p., $2. A new translation by Henry Alden Bunker of what is called one of Freud's major works. An addendum contains a modification of the great psychoanalyst's earlier views and new material.

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Comparative Psychology

THE SENSORY BASIS OF MAZE LEARNING IN RATS—C. H. Honzik—*Johns Hopkins,* 113 p., $1.50. The normal rat relies chiefly on vision and only to a minor extent upon his sense of smell. In blind rats, smell takes the place of vision and hearing is also important. This is the report of experiments conducted at the University of California. Comparative Psychology Monograph No. 64.

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Social Service

SUPERVISION IN SOCIAL CASE WORK, A PROBLEM IN PROFESSIONAL EDUCATION—Virginia P. Robinson—*Univ. of North Carolina,* 199 p., $2.50. The author's classes on "Problems and Methods of Supervision" at the Pennsylvania School of Social Work provided the material for this book.

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Mineralogy

THE STORY OF DIAMONDS—A. C. Austin and Marion Mercer—*Chicago Jewelers' Association,* 96 p., illus., 50c; 100 copies, 30c each; 1,000 copies, 20c each. Tells the interesting facts that people want to know about diamonds, not merely the famous gems, but also the nature of the stones and how they are mined and cut. The booklet is published in response to numerous requests for information following the diamond exhibit at the Century of Progress.

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GUIDES TO BIBLIOGRAPHIES OF THESES—Thomas R. Palfrey and Henry E. Coleman, Jr.—*American Library Assn.,* 48 p., $1.

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